

CLAIMS

1. A process for the preparation of oxides and hydroxides of group II metals and transition metals in the form of nano- micro-particles comprising the following steps:
 - 5 a) double exchange reaction, in aqueous or organic phase, between a metal compound and an alkaline hydroxide
 - b) calcination of the metal hydroxide obtained in step a).
2. The process according to claim 1, wherein the group II and transition metal oxides or hydroxides are selected from the group consisting of oxides or
10 hydroxides of: zinc, zirconium, titanium, magnesium, iron, cobalt, nickel.
3. The process according to claim 1, wherein the metal compound is a salt soluble in water.
4. The process according to claim 3, wherein the salt is a: chloride, nitrate, acetate.
- 15 5. The process according to claim 3, wherein the salts are: $ZrCl_4$, $ZrOCl_2$, $TiCl_4$, TiF_4 , $TiOCl_2$, $Mg(NO_3)_2$, $Co(NO_3)_3$, $ZnCl_2$, $Ni(NO_3)_2$, $FeCl_3$.
6. The process according to claim 1, wherein:
 - a) a solution of a group II or transition metal chloride and an aqueous solution of an alkaline hydroxide are made to react in homogeneous phase;
 - 20 b) the metal hydroxide formed in the previous step is collected by centrifugation, filtration or decanting and optionally purified by washing or treatment with ultrasound;
 - c) the hydroxide is calcinated in air or in inert atmosphere.
7. The process according to claim 6, wherein the chloride of the transition metal is
25 dissolved in water or in an organic solvent miscible with water.
8. The process according to claim 7, wherein the organic solvent is selected from the group consisting of diols, 1,2,3-propanetriol and dimethyl sulphoxide.
9. The process according to claim 8, wherein the diol is selected from the group consisting of 1,2-ethanediol and 1,2-propanediol.
- 30 10. The process according to claim 6, wherein the reaction in step a) is carried out at a temperature ranging between 50° and 180°C.
11. The process according to claim 6, wherein the calcination takes place at a

temperature ranging between 250° and 1100°C

12. Oxides and hydroxides of group II and transition metals in the form of particles having dimensions ranging between 10 and 1000 nm obtained according to the process defined in claims 1 – 11.

5 13. Oxides and hydroxides according to claims 12, wherein the particles have dimensions ranging between 50 and 500 nm.

14. Dispersions containing the oxides or hydroxides as defined in claims 12 and 13.

10 15. Dispersions according to claim 14, wherein the liquid of the dispersion is selected from the group consisting of water, ethanol, propanol and isopropanol.

16. Use of the oxides and hydroxides as defined in claims 12 and 13 or of the dispersions as defined in claims 14 and 15 for the treatment of ceramic surfaces, textile products, paper materials.